WEAPON SYSTEM POLLUTION PREVENTION

MONITOR

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WEAPON SYSTEM PROFILE

C-17 GLOBEMASTER III: MEETING THE WORLDWIDE AIR MOBILITY REQUIREMENTS OF THE U.S.

Threats to US interest in recent years have changed. The size and weight of U.S. mechanized firepower and equipment has grown in response to improved capabilities of potential adversaries. This trend has significantly increased air mobility requirements, particularly in the area of heavy outsized cargo. The C-17 Globemaster III, which is currently the most flexible aircraft in the Air Force inventory, helps address the shortfalls in the current airlift force.

The C-17 aircraft is capable of rapid strategic delivery of troops and all types of cargo to main operating bases or directly to forward bases in the deployment area. The aircraft can also perform theater airlift missions when required. The inherent flexibility and performance characteristics (see Figure 1 on page 2) of the C-17 force improves the ability of the total airlift system to fulfill the worldwide air mobility requirements of the United States.

The Single Program Office (SPO) for C-17 aircraft, managed under the guidance of Brig General Charles L. Johnson is located at Aeronautical Systems Center (ASC).

Environmental management activities for the SPO are located in the Integration and GFE office (see Figure 2 on page 2 for the SPO organizational structure). Recognizing the potential impact of environmental concerns on system specifications, the SPO has leveraged environmental expertise from the ASC Acquisition Environmental Management to both manage the C-17 environmental program and work the day-to-day issues. The weapon system profile articles in this issue of the MONITOR (see pages 2-5) summarize the infrastructure and the activities of the C-17 Pollution Prevention Integrated Product Team (P2 IPT). ■

Figure 1. A Unique Combination to Meet User Needs

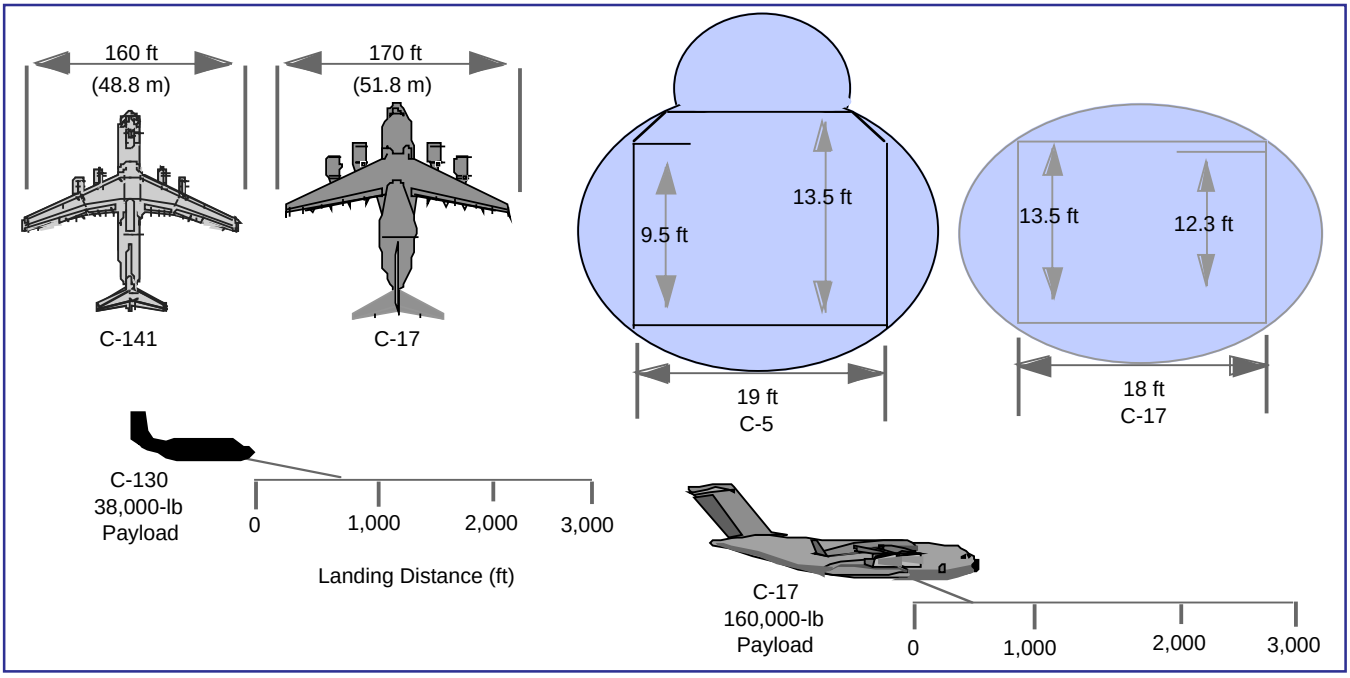
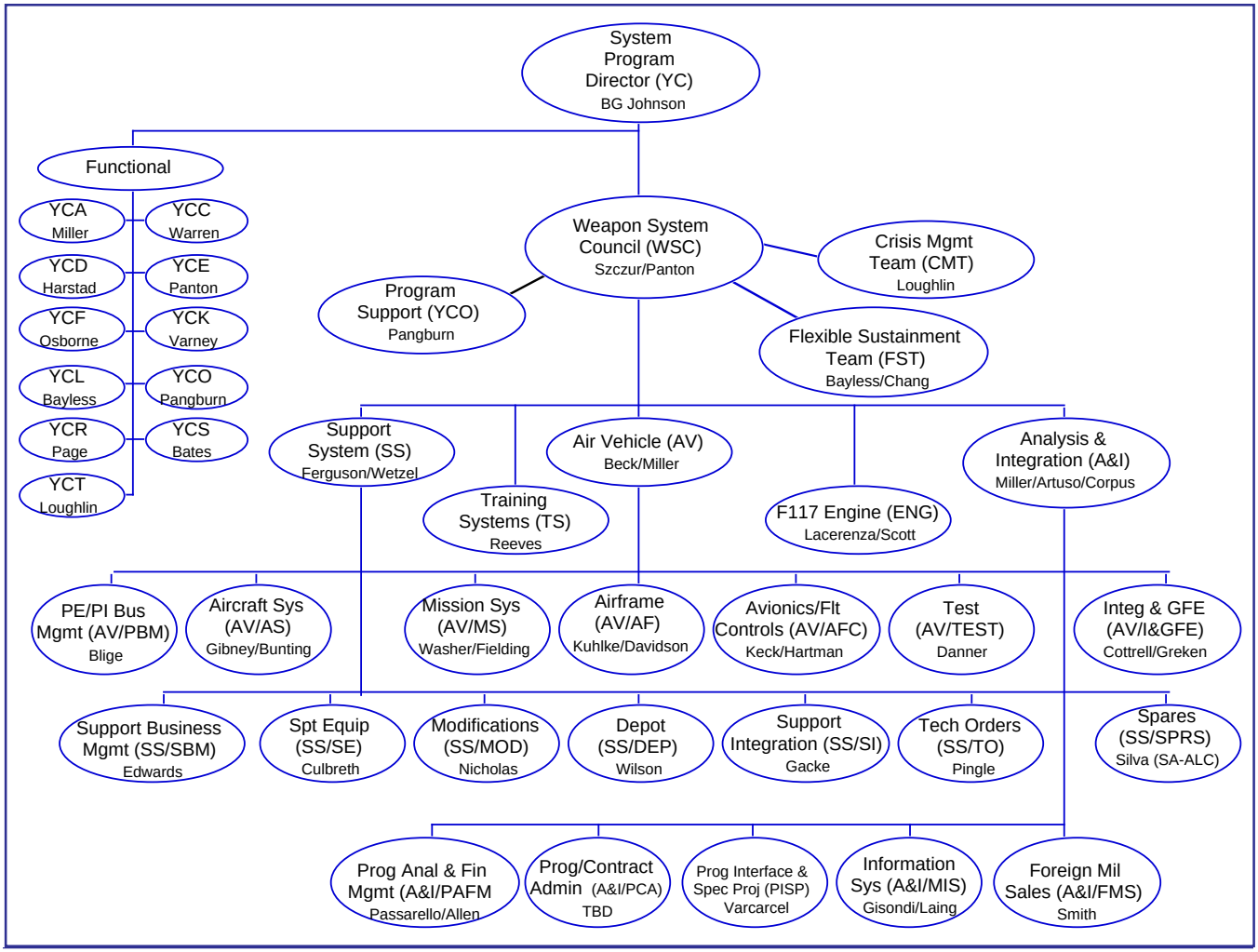


Figure 2. Structure of the C-17 Single Program Office



POLLUTION PREVENTION INTEGRATED PRODUCT TEAM (P2 IPT): C-17'S SOLUTION FOR INCORPORATING ESH CONSIDERATIONS INTO THE WEAPON SYSTEM

Recognizing the need to integrate Environment, Safety, and Occupational Health (ESH) consideration into its infrastructure, the C-17 Single Program Office (SPO) has leveraged existing environmental expertise from ASC Acquisition Environmental Management. The environmental co-locate is given the prime responsibility for institutionalizing pollution prevention by supporting day-to-day SPO activities and assisting the C-17 program establish the Pollution Prevention Program.

To ensure that the co-locate has access to the necessary resources and stakeholders in order to develop a Pollution Prevention Program, the C-17 has established a Core and Expanded Pollution Prevention Integrated Product Team (P2 IPT). The Core P2 IPT comprises of SPO as well as McDonnell Douglas Aerospace, Military Transport Aircraft (MDA-MTA) members (see Figure 3). The Expanded P2 IPT brings together the necessary stakeholder required in life cycle decision making (also see Figure 3). The primary roles and responsibilities of the Core and the Expanded P2 IPT are summarized in Figure 4.

Figure 3. P2 IPT Members

Core P2 IPT

- Air Vehicle IPT (Chair)*
- C-17 IPT Reps (as necessary)
- MDA-MTA P2 Team

Users and Maintainers

- HQ AMC (LG, CE, SG)
- HQ AETC (LG, CE, SG)
- Charleston AFB (LG, CE, SG)
- Altus AFB (LG, CE, SG)
- McChord AFB (LG, CE, SG)
- Jackson Air National Guard (DO, EM)

General Membership

- ASC/EMV (SPO Support Team)
- HQ AFMC Pollution Prevention IPT
- Air Staff Weapon System P2 IPT
- SA-ALC/TIEM
- WR-ALC (C-141 SPD)
- Laboratory Representatives (WL, AL)

** IPT Chairs include Lt Robert Reed (C-17 SPO) and Mr. Bob Ciesla (MDA-MTA)*

Figure 4. P2 IPT Members' Roles and Responsibilities

Core P2 IPT Roles and Responsibilities

- Provide Direction and Cohesion for P2 Program
- Establish P2 Program Objectives and Track Progress
- Host Exp P2-IPT Meetings (Quarterly)
- Identify Opportunities for Reduction and Elimination

Expanded P2 IPT Roles and Responsibilities

- Provide Forum for Managing Environmental Risk Across the Program for the Life Cycle of the System
- Assist and Advise C-17 SPO in Environment, Safety, & Health (ESH) Decision-making
- Aid C-17 Contractors in Developing and Executing a Successful ESH Program
- Assist C-17 Agencies in Compliance With Federal, State, and Local ESH Laws
- Facilitate Technical Interchange Between C-17 Developers, Users, and Supporters
- Identify and Crossfeed ESH Requirements and Opportunities for all Aspects of the Program
- Expedite Resolution of C-17 ESH Issues
- Ensure Coordination of Implementation of HAZMAT Alternatives
- Encourage ESH Awareness and Provide Training

Through the Core and Expanded P2 IPT, the C-17 program has established a systematic approach for addressing weapon system pollution prevention. This approach is outlined and documented in the C-17 Pollution Prevention Program Plan. The plan includes in-house specification review and clean up. Currently Class I ODSs have been removed from all contractual documents. Additionally, the plan baselines HAZMAT use during production, operations, and maintenance and is used as a basis to identify elimination/reduction opportunities. This effort for project generation is supported by a cross-reference system that identifies HAZMAT usage in all Technical Orders, LSA Data and Material/Process Specifications used in the C-17 aircraft. Additional project needs are identified through the Expanded P2 IPT, the Collocate Advisory Board and through teaming initiatives with Wright Labs.

All pollution prevention projects identified for the C-17 are ranked using a prioritization criteria. Once projects are ranked, MDA-MTA conducts a risk assessment to evaluate the project's feasibility based on environmental, cost, schedule, and performance (see Figure 5 for methodology process).

Figure 5. Overview of the C-17 Risk Assessment Process

- Evaluation
  - Laboratory
  - Production
- Life Cycle Cost
  - Developmental Cost
  - Weapon System Cost
  - Operating and Support Cost
- Risk Analysis
  - Weighted Matrix (Env, Cost, Schedule and Performance)
- Recommendation
  - Implementation Plan
- Metrics (lbs reduced in Production and Field Support)

The C-17 program uses the results of the risk assessment to select projects for implementation. To date, the C-17 program has identified 49 pollution prevention projects (see Figure 6 for sample projects) with 10 of these projects currently being implemented. These projects have collectively reduced HAZMAT use by 7900 lbs/aircraft/year. Additionally, by the end of CY97, all C-17 TOs will be ODS free with the exception of Halon and LOX cleaning.

Central to the programmatic approach to institutionalize pollution prevention in the C-17 has been the communication cross-feed established between various stakeholders through the P2 IPT structure. The Core P2 IPT is responsible for organizing expanded quarterly cross-feed meetings. Details related to a recent P2 IPT meeting are provided on page 5.

For further information regarding the activities of the C-17 P2 IPT, please contact Lt Robert Reed at DSN 986-9311. ■

Figure 6. Sample P2 Projects for C-17 Program

- Implement Water-based Paint Primer
- Implement Sealant Cleanup Solvent (HAZMAT Free)
- Implement Precoating Surface Cleaner (HAZMAT Free)
- Implement Aqueous Degreasing (HAZMAT Free)
- Implement Adhesive Promoter, Fuel Tank Sealing (HAZMAT Free)
- Implement NDI Penetrant Dye Remover (HAZMAT Free)
- Implement Non-CFC Sensor Chill Testing (HAZMAT Free)
- Implement Chrome-free Corrosion Inhibiting Sealant
- Implement Non-CFC Electrical Contact Cleaning
- Implement Non-ODC Locking Compounds
- Evaluate IVD Al replacement of Cadmium Plating
- Evaluate Non-Chromated Primer for Exterior Mold Lines
- Evaluate Electrodeposited Primer

SUCCESS STORY: PRE-COATED RIVETS SAVE $ 2.2 MILLION ON THE PRODUCTION OF THE C-17 AIRCRAFT

In collaboration with the Air Force, the MDA-MTA pre-coated fastener team and its supplier partners have developed a dry sealant for titanium pins and aluminum rivets that has increased productivity. To date, the 1.4 million fasteners required for each C-17 during production have been installed “wet” using sealant applied by mechanics. Keeping old sealant refrigerated requires 5-30 minutes to reach the proper temperature prior to application. The sealant tubes cost $4-$6 to buy and cost $10 to be disposed of as hazardous waste.

Introducing pre-coated fasteners has saved money and improved the quality of work for the mechanics. It also has improved the quality of the product by avoiding problems where rivets don’t fill the hole tightly. It has reduced the process variability factor in installing 590,000 titanium pins and 733,000 rivets. The coating ensures corrosion protection in each hole. The new pre-coated dry sealant pays off especially in terms of efficiency. The fastener coating simplifies the mechanics lives and lets them do more. It is estimated that 2.3 million labor hours will be saved during phase 1 and phase 2 production. C-17 program accountants estimate that this innovation will save $2.2 million as each new Globemaster III comes down the assembly line.

For further information regarding this innovation, please contact Mr. Chris Vickers, ASC/YCEF at DSN 785-1034. ■

C-17 HOSTS EXPANDED P2 IPT MEETING

The C-17 P2 IPT held it quarterly cross-feed meeting in Long Beach, CA on 13-14 February 1997. The meeting was hosted by McDonnell Douglas Aerospace, Military Transport Aircraft (MDA-MTA) under the direction of Mr. Bob Ciesla, Co-Chair, P2 IPT.

In his opening remarks, Lt Col Russ Loughlin, (Chair, Expanded P2 IPT) commended the progress the P2 IPT had made in the last year under the direction and enthusiasm of Lt Reed. He stated that the systems approach to environmental control, implemented through initiatives such as the project prioritization matrix, has helped the program understand "the size of the elephant" they are dealing with. By next year, the program will have cleaned its ODS where feasible and the challenge now remains on how to maximize resources as the program moves out of the production phase. This challenge becomes even more difficult as the C-17 SPO will be downsizing. The goal therefore ultimately is to institutionalize pollution prevention so that every engineer, process personnel and Technical Order writer incorporates environmental consideration in the day to day aspects of their jobs.

Following Lt Col Loughlin's opening remarks, Lt Robert Reed discussed the goals for the meeting with input from the group as a whole. The goals focused on the needs of the SPO, MDA and field personnel. Topics covered at the P2 IPT meeting that addressed these goals included the following:

- Paint related issues
- Overview of the C-17 pollution prevention selected projects
- Educational seminar on future environmental rules and regulations
- Overview of the pollution prevention project development process
- Status of the C-17 flexible sustainment contract
- Program status

For a copy of the action items developed from this meeting and/or a copy of the meeting minutes, please contact Lt Robert Reed at DSN 986-9311. ■

Status of the C-17 Fleet (Dec 1996)

COMMUNITY CROSS-FEED

FROM THE DESK OF MR. TAD McCALL…

I am pleased to have an opportunity for SAF/MIQ to make regular contributions to the Weapon System Pollution Prevention MONITOR. It is my plan to reach out to you regularly with new ideas to improve our productivity. I in turn ask for your feedback. Based on your input, we can transform our workplaces by employing sensible ideas and practices.

On February 26, 1997, I outlined SAF/MIQ goals to the AF Environment, Safety, and Occupational Health (ESOH) Committee. Our ESOH goals spring from several bedrock philosophies. First, history tells us that in spite of our best wishes, the period of peace that we are in will inevitably be followed by a period of struggle. We must be prepared for when the pendulum returns to increased funding to have the core operational and support elements in place to rebuild the robust organizations necessary to deal with the conflict. Second, Environment, Safety, and Health programs, if properly implemented, are program enhancers not detractors. For example, industry now views pollution as the by-product of an inefficient process. Additionally, safety costs from accidents and lost time are overhead costs that can be avoided. The worker, and the worker's health should be at the center of such an improvement process and they should be empowered to bring about the required change.

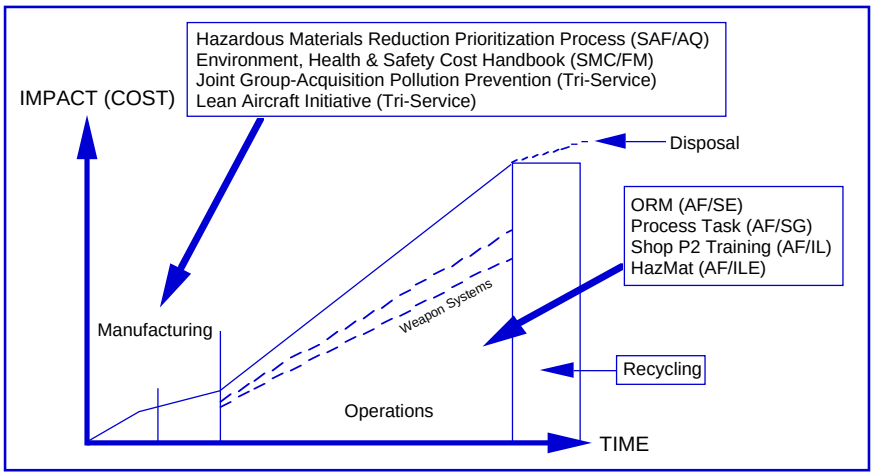
We serve, as do others in the AF, to support Mission Accomplishment. To achieve that goal we insist that our ESOH programs support the principles of Readiness, Being a Good Neighbor, and Leveraging Resources as outlined by the Secretary and the Chief of Staff in their March 13, 1995 memorandum on ESOH initiatives.

The AF has decided that the first step toward a goal of ESOH productivity is to examine how we can integrate our technical resources and goals with those of AF/XP. We will now be examining how we can partner with BGen Hugh Cameron and staff at the AF Quality and Management Innovation Center (AFQMIC), Randolph AFB, TX. The Center can help us recommend productivity increases by examining and analyzing ESOH processes, barriers, and enablers at the various MAJCOMs.

The 06-level Overarching Integrated Process Team supporting the AF ESOH Committee will make recommendations toward a more detailed strategy in April 1997. The goal of the ESOH community is to support the AF's efforts to continue force modernization while maintaining a rigorous operational tempo in a period of decreased Total Obligation Authority.

I have been working with industrial leaders of major global companies like Ford, Dow, and 3M. I have learned of their high expectations for productivity improvement through integration of ESOH into their planning and execution. Integration of ESOH is seen by these companies as crucial to their success in global competition. The productivity improvements industry counts on varies from company to company; however, they are uniformly substantial. I know we are as good, and I believe we have even greater opportunities for new efficiency. That is why I recommended that the ESOH Committee adopt a 30% productivity improvement goal to be achieved by 2005.

The productivity improvement support we provide from the greater Environment, Safety, and Health Community effects every aspect of AF operations and support. The chart shown below shows how costs increase during the life-cycle of a weapon system. There are programs and opportunities to improve productivity in installation management, the ESH area, and in weapon systems operations. (The SAF/MIQ presentation to the ESOH Committee will be published in the committee minutes and will be available on the MONITOR homepage.)



I believe the product you see in the field from this initiative will be evolutionary, but in the end we will be profoundly transformed. We will have provided the human being with the tools to be the master of the machine and the workplace. We will drive out costs and inefficiencies currently embedded in our vertical, unintegrated organizational structure by introducing ESH (and other) cross functional tools to our employees. Employees from different functional areas will work together in performance stewardship that replace traditional functional rivalry with cross disciplinary synergistic solutions that improve our performance dramatically. There are many successful efforts ongoing to reduce ESH costs and increase productivity in our weapon system-ESH communities. In some cases we will have to change the way we look at our efforts toward a common productivity vocabulary. It is my hope to strengthen the communication among all involved to foster a more unified and consistent effort.

The MONITOR is a great example of communication that is already working. Let me know through Lt Col John Garland my Assistant for Pollution Prevention (garlandj@af.pentagon.mil; DSN 227-1019) how we can best use this column to get you the information that you need to do your job. Your input is a critical part of breaking the barriers of the current unintegrated structure. I look forward to hearing from you to collectively address the challenge ahead of us. ■

PERSPECTIVES IN PROFILE: THE CHALLENGES ASSOCIATED WITH CONDUCTING A LIFE CYCLE COST ANALYSIS

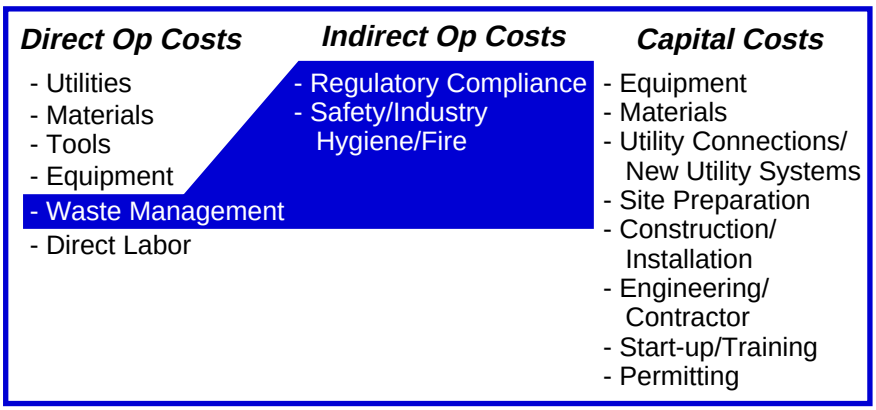
When managed well, environmental factors have become a source of competitive advantage for a business. Today, companies are conducting Life Cycle Assessments (LCAs) for various products/processes to identify strategic opportunities that may lead to environmentally sound products, cost reduction, and increased market share. The underlying objective of the LCA is to quantify, assess and ultimately improve the environmental performance of the company's products and processes.

The federal government has also adopted policies to integrate the cost of environmental management into the traditional weapon system requirement planning process. The new AFI on hazardous waste (AFI 32-7086) states that HAZMAT reduction needs must now compete in the Planning, Programming, and Budget System (PPBS). Central to this justification is the challenge associated with transmitting the HAZMAT cost and usage information, collected as a routine part of installation-level HAZMAT management, into environmental costs associated with a weapon system.

During the Center Working Group (CWG) meeting held at Edwards AFB on 4-6 March 97, Major Norm LeClair (OO-ALC/EMP) summarized the challenges associated with providing Single Managers the appropriate data to understand the environmental costs associated with their weapon system(s). His briefing was based on the Manufacturing and Maintenance Process Cost Analysis Tool (M2PCAT) feasibility study conducted by Parsons Engineering Science, Inc. for HSC/EMP.

As a part of the study, Parsons Engineering identified the cost factors associated with manufacturing and maintenance processes and summarized these factors into 3 cost types with 16 cost categories (see Figure 7). At Hill AFB, like other ALCs, the various cost components of Environmental Management and Occupational Health (see Figure 8 on page 8) are rolled up into the cost of operations and then are partitioned into a loaded labor rate. There is no empirical data that can be used to develop an extrapolation algorithm.

Figure 7. Overview of Manufacturing and Maintenance Process Cost Factors



Based on this evaluation, currently the data does not exist at Hill AFB which would allow the linkage of environmental management or industrial cost to a process or a weapon system. This means that the environmental and occupational health costs associated with a process becomes a function of the number of personnel hours used to execute the process. Based on a loaded labor rate extrapolation, a person typing for three hours would incur the same environmental and occupational health costs (and liabilities) as a person working with an extremely hazardous substance. This would also be the case if that substance required the use of a fully encapsulated suit, special operating procedures, and controlled disposal as a hazardous waste. According to Maj LeClair, our current financial accounting system at this time does not facilitate linking environmental and occupational health costs to a process or weapon system. Therefore, to develop ESH costs analysis for our weapon systems within the current financial management framework is basically untenable.

Figure 8. Cost Components Associated With Environmental Management and Occupational Health

Regulatory Compliance	Safety/Industrial Hygiene/Fire
• Manifesting On and Off Site	• Personal Protective Equipment
• Testing	• Spill Response
• Labeling	• Medical Exams
- For Accumulation and Disposal	• IH Surveys
• Permitting	• Medical Surveillance
- Air, Wastewater Hazardous Waste	• Injuries
• Monitoring	• Safety Inspections
• Record Keeping	• Fire Inspections
• Compliance Training	
• Reporting	

The MONITOR invites comments/responses to this perspective. Contractor input from both business and federal facility perspective that may help address this issue is particularly welcomed. Response comments and submissions will be published in the May 1997 issue of the MONITOR. Please send your comments by e-mail to Mr. John Biggs at john.biggs@guardian.brooks.af.mil. ■

THE MONITOR ON INTERNET

The Weapon System Pollution Prevention MONITOR is now available on the Internet. Issues will be placed on the net about one week after publication. The newsletter can be accessed via the HSC/EMP Home Page at http://www.brooks.af.mil/HSC/EMP/emp-home.htm. Any World Wide Web browser (e.g., MOSAIC) can be used to view or download newsletter issues. All internet sites listed in this publication can be accessed through the MONITOR directly.

EDITORIAL

For the last few years, the MONITOR has routinely pulsed the weapon system pollution prevention community in order to disseminate timely information to its readers. This effort has been effective in both increasing the recognition of the MONITOR within the community and cross-feeding pertinent pollution prevention information. As a result, a cross-functional network of advocates from Air Staff to the field have routinely contributed to this publication. Additionally, many contractors have stated that they use this publication as a tool to better understand the key issues facing the AF weapon system pollution prevention community.

As indicated in the article by Mr. Tad McCall, the future challenges facing the ESOH community requires both collaboration and innovation. To meet this challenge requires establishing a dialog of both ideas and information. It requires on-going communication of divergent experiences in order to establish a common ground for action. Through the "Community Cross-Feed" section of the MONITOR, we hope to establish a platform for such dialog. This requires your participation. If this publication is serving your needs, then we ask you to participate in this effort. How can you help? First, let us know what are the top five challenges you are facing. Second, send us your meeting minutes so that we can get the pertinent information to other readers that may benefit. Third, respond to published articles – give us your perspective on the issue and/or information provided. I hope to hear from you. Please feel free to call me at DSN 240-5452 (commercial 210-536-5452) or send me an e-mail at john.biggs@guardian.brooks.af.mil. ■

HAZMAT PHARMACY WORKING GROUP MEETING UPDATE

The HAZMAT Pharmacy Working Group meeting was held on 22-23 January 1997 at Fort Walton Beach, FL. Col. Shambo, 96th ABW Commander at Eglin AFB welcomed all attendees and stressed this group's vital function in the Air Force's future during this period of manpower and funding reductions. He challenged participants to share lessons learned and collectively work together to improve the Air Force's hazardous materials management processes.

Mr. Ken Duke, IIQ AFMC/LG-EV provided an overview of the goals of the workshop and introduced the HQ AFMC/LG-EV web site to the participants. The web site (http://www.afine.wpath.af.mil/organizations/IIQ-AFMC/LG-lg-ev/) has been established to assist the pharmacies in finding HAZMAT alternatives, share information/lessons learned, list excess material, and search alternate sources for hazardous materials management information.

Mr. Duke also summarized the direction of the current AFMC/AF's efforts to provide input to the DoD Hazardous Substance Management System (HSMS). He discussed the plan to submit command input to the AF for HSMS version 3.0 and, in the interim, developing cradle-to-grave tracking capability within existing systems until the HSMS becomes available.

Mr. Duke announced that the AFMC Instruction, being developed by the AFMC HMP Integrated Product Team, will most likely be released in April 1997. Mr. Wade (AF/TLMM) stated that an Air Force Instruction will be published in final draft form shortly with the milestone of publication anticipated in the April-May 1997 time frame.

Mr. Hanna, LAAFB provided a briefing on contracting procedures at their installations. LAAFB HAZMAT IPT has developed a "special clause" to control HAZMAT brought on-site by outside contractors. CE and PK have been tasked to implement this requirement in new contracts. LAAFB has developed labels that will be provided to contractors to "tag" all hazardous materials. Arnold AFB has been using similar procedures which have been documented in a video and will be made available to HQ AFMC/LG-EV.

Other presenters at the workshop include Ms. Bagi (DRMS), Ms. Christianson (McClellan AFB), Mr. Sowards, PRO-ACT, and Mr. Coyle (HQ AFMC/CE). Ms. Bagi provided an overview on DRMS's Return to Manufacture procedures and policies. Ms. Christianson briefed the advantages and cost savings experienced at McClellan with their Just-In-Time Contracting efforts. Mr. Sowards provided an informational briefing on PRO-ACT and Mr. Coyle discussed future pollution prevention funding.

For a copy of the meeting minutes and/or briefings, please contact Mr. Ken Duke at DSN 787-3487.

The MONITOR will routinely feature articles related to hazardous material management issues in the Air Force/DoD. Please submit your lessons learned, questions, and/or summaries of your HAZMAT Pharmacy meetings for publication. Please send your information by e-mail to Mr. John Biggs at john.biggs@guardian.brooks.af.mil. ■

FEEDBACK FROM HSC/XRE'S ESOH TECHNOLOGY NEEDS SURVEY (TNS)

In July 1996, HSC/XRE kicked off the FY97 ESOH TNS. Although the ESOH TNS procedures are well established, the following changes were implemented for FY97 to further enhance ESOH technology requirements collection:

- The audience for the survey was expanded from MAJCOMs and AFMC's Air Logistics Centers (ALCs) staff to All USAF installations (including AFRES and ANG units). The expansion was made to ensure that all ESOH issues that could impact USAF installations/missions/personnel were identified through a "bottoms-up" review.
- The survey was distributed to Environmental, Safety, Occupational Health and Logistics POCs at installations in order to identify true ESOH needs.
- The TNS was modified to also collect requirements for Weapon System (WS) through the Hazardous Material Reduction Prioritization Process (HMRPP). The driving force behind this initiative is the shrinking USAF budget and the need to minimize environmental compliance costs through P2 initiatives.

- The use of the World Wide Web (WWW) was tested at Hill AFB for ESOH needs collection. The WWW is clearly the future of information exchange and may be the future tool for ESOH TNS and requirements collection in general.
- The TNS validation process was expanded to include visits to a number of different MAJCOM installations with a wide variety of missions.

Results of the New Approach

Initially, HSC/XRE started the FY97 TNS with 366 ESOH technology needs. From the July 1996 kick-off through the end of the validation visit in early November 1996, 324 new requirements were collected. Although many of these needs were later withdrawn as invalid or identified as non-technology issues during the validation/scrubbing/review process, the magnitude of the response from installation ESOH personnel clearly indicated the "bottoms-up" approach had merit.

During the TNS, the scrubbing/validations/review process also impacted the original 366 ESOH needs. Submitters and subsequent MAJCOM reviewers canceled and combined many of these requirements. The changes and the 100 plus new technologies submitted resulted in a new integrated FY97 ESOH Technology Needs List. Nearly 32% of the needs turned out to be WS HMRPP related.

Just as the impact of the other changes showed in the ESOH TNS process, the WWW test at Hill AFB also proved successful. Hill AFB was able to successfully input their requirements via HSC/XRE WWW site, and the XRE staff was also able to effectively update/maintain the survey database from visited bases using Internet access.

What's Next?

HSC/XRE will shortly be publishing the FY97 TNS Final Report. ESOH TPIPT members should look for this information on the WWW site http://xre22.brooks.af.mil. For further information, please call Mr. Gary Whitfield at DSN 240-3455/Comm (210) 536-3455. ■

WEAPON SYSTEM P2 CWG UPDATE

On 25 Feb 1997, Lt Gen Lawrence P. Farrell, Jr., HQ AFMC/CV, officially signed the charter for the AFMC Weapon System Pollution Prevention (P2) Center Working Group (CWG). The charter outlines the CWG's mission and the responsibilities of its members. The mission includes identifying and resolving common weapon system P2 problems and enhancing communication/information exchange among Single Managers (SMs), AFMC Centers, HQ AFMC, MAJCOMs, Air Staff, and other customers/partners. Responsibilities of the centers include designating a primary and an alternate member to represent their weapon system P2 issues at all meetings. The CWG chairman is selected from the HQ P2 IPT.

The 6th Weapon System P2 CWG Joint Solutions to Common Problems meeting was held 4-6 Mar 97, at Edwards AFB, CA. Maj Gen Engle, Commander of AFFTC, welcomed the working group. Presentations included ways ESH has been incorporated into the F-22 acquisition process, bioenvironmental engineering (BEE) influence in the F-22 SPO, test and evaluation P2 opportunities, and how the CWG can better communicate to the weapon system community.

The Weapon System P2 CWG resolved to take a new approach and focus on specific issues. Three break-out groups were established to work the following issues: CWG concept of operations, building/identifying out-year P2 requirements when the existing P2 goals are met or are eliminated, and establishing some type of ESOH performance indicators for SMs for their P2 efforts throughout all phases of a weapon system life cycle. Each group facilitator provided a short recap on the progress of their working group at the end of the meeting. An action plan was provided with progress reports to be presented at the monthly VTCs. For additional details regarding the activities of the CWG working group, please contact Mr. Ray Olfky at DSN 787-6220. ■

BOEING/JG-APP INITIATIVES TO DEVELOP JOINT TEST PROTOCOLS

Boeing Defense and Space Group and the Joint Group on Acquisition Pollution Prevention (JG-APP) held their first technical meeting at Kent, WA on 4 Feb. 1997. This meeting was hosted by the Defense Contract Management Command of Boeing, Seattle, WA.

The purpose of the meeting was to gather engineering requirements from all the affected weapon system program managers to develop Joint Test Protocols (JTPs) to qualify potential alternatives for target HAZMAT/processes, specifically in this case, cadmium plating, chromium plating and nickel strike. Affected Air Force weapon systems include the following: E-3 AWACS, 767 AWCS, E-4B MILSTAR, KC-135, AGM-69 SRAM, AGM-86C CALCM, AGM-86B ALCM, EELV, Inertial Upper Stage IVS, Minuteman, Peace Keeper, Joint Strike Fighter, B-1B, B-2, B-52, and F-22.

JTP objectives are to qualify potential alternatives for a target HAZMAT/process including identifying engineering criteria and a description of the necessary test and evaluation. This will require obtaining consensus on engineering requirements and potential alternatives from affected Single Managers and Boeing.

The potential alternatives selection process screened the identified target HAZMAT alternatives through technology survey and stakeholders input. Viable alternatives will be down-selected based on life-cycle cost impact, preliminary ESOH analysis, and comparison with the baseline process. The recommended potential alternative will then be subjected to JTP qualification testing.

Boeing recommended tin-zinc plating to replace cadmium plating and high velocity oxygen fuel (HVOF) to replace chromium plating. Cadmium plating replacement was identified as the most important of the two efforts. The substrates being evaluated for tin-zinc plating include low strength steel (ultimate tensile strength up to 200 KSI), stainless steel, and aluminum. The application will be on threaded and non-threaded components. Boeing will later evaluate HVOF to replace chrome plating for applications such as corrosion protection and rebuilding worn components.

A technical discussion was held to identify cadmium replacement engineering requirements of which about twenty different requirements were identified. The discussion also identified the necessary test criteria and the engineering requirements to include in the JTP.

The Naval Research Laboratory (NRL) briefed a DoD project on HVOF and physical vapor deposition (PVD) to replace hard chrome plating. Chromium plating operations are being impacted by a proposed new permissible exposure limit (PEL) which will reduce the allowable amount per cubic meter of air by 100 fold (51 micrograms/cubic meter to 0.5 micrograms/cubic meter). An initial assessment found that HVOF and PVD coatings have the potential to replace the majority of chrome plating applications. This is a joint Air Force, Navy and Army project established to insert technology into depots and qualify coatings for aircraft components. The objective of the HVOF project is to obtain generic qualification of coatings. A comprehensive test plan has been established and the preliminary cost evaluation is favorable - HVOF coatings should be less expensive than hard chrome plating.

For further information regarding this technical meeting, please contact Ms. Michele Pok, SA-ALC/TIEM, at DSN 945-7391/Comm. 210-925-7391. ■

ACC ENVIRONMENTAL TRAINING SYMPOSIUM UPDATE

HQ Air Combat Command (ACC/CE) hosted an environmental training symposium on 3-7 Feb 1997 at the Hyatt Regency Hotel in Houston, TX. Over 1000 attendees were present at the conference. The symposium offered over 75 courses on a wide range of environmental issues. Some of the courses which may be of particular interest to the weapon system pollution prevention community are described below.

Ms. Mary Ruth Senn, HQ ACC/CEVQM, DSN 574-3668, discussed the applicability of the aerospace national emission standards for hazardous air pollutants (Aerospace NESHAPs) to ACC bases and the options for compliance. Aerospace NESHAPs are applicable to the manufacture or rework of aerospace vehicles or components when applying primer and topcoat, depainting, using chemical milling maskant, and for waste storage and handling activities. All hand-wipe, spray gun, and flush cleaning operations must be addressed. The compliance options are as follows: reduce base emissions below threshold, use only “compliant” paints and solvents with installed filter system, or install a costly filter and control system ($1.5 - 5 million per paint barn).

Mr. Drew Francis, HQ ACC/LG, and Ms. Patricia Malinowski from Ecology and Env. Inc., (716) 684-8060, briefed De-Icing P2/ Best Management Practices. Runway and aircraft de-icing materials and processes have been extensively studied. Inattention by field units and Single Managers (SMs) can cause pollution problems or cause damage to aircraft. Environmentally compliant materials used by civil engineering to de-ice runways may damage aircraft or equipment attached to aircraft pylons; field units must coordinate runway de-icing materials with SMs of the equipment being operated at their base. SMs need to be aware of new materials being used to de-ice aircraft to ensure materials compatibility and that flight performance will not be affected.

Mr. Ron Joseph, Ron Joseph and Associates, (408) 446-9736, presented information on what painters and supervisors need to know about coating VOCs and the Aerospace NESHAP. Painters should avoid using spray guns which may overspray. Mr. Joseph recommended a method to set up a high-volume/low pressure (HVLP) gun to meet the objectives of improving painter performance and air compliance. Proper training in setting up a HVLP spray gun not only improves the painter's performance, meets environmental goals of pollution prevention and emission reduction, but is cost-effective (cost savings of between 10-20% have been demonstrated at bases where this training has been implemented).

For further information, please contact Lt Phil Wills, SA-ALC/ TIEM, at DSN 945-7391/Comm 210-925-7391. ■

RE-REFINED OIL AVAILABLE FROM DSCR

The Defense Supply Center Richmond (DSCR) has 10W30 and 15W40 re-refined oil for sale. The re-refined oil has been put through a process, which consists of vacuum distillation and hydrofinishing, to remove contaminants and additives to produce a "new" base stock, allowing the oil to be reused.

The 10W30 oil is procured in accordance with Commercial Item Description A-A-52039, with a minimum 25% re-refined base stock. It meets the American Petroleum Institute (API) "SH" performance classification and the International Lubricant Standardization and Approval Committee (ILSAC) "GF-1" standard.

The 15W40 oil is procured in accordance with Military Specification MIL-L-2104, and contains a minimum 25% re-refined base stock. It meets the American Petroleum Institute (API) CD and CD-II performance levels and has been qualified by the Army's Mobility Technology Center-Belvoir, Fort Belvoir, VA. This oil is designed for use in all combat and tactical, diesel and gasoline powered, ground vehicles and equipment, and includes performance requirements for power shift transmissions. This 15W40 re-refined oil may also be used in many hydraulic, power steering, power transmission, and gear box applications, as specified by the lube orders.

The oil may be ordered by all military and federal customers using the NSNs listed below with unit of issue and price per unit, case, can or drum included.

NSN	Unit of Issue	Viscosity	Price
9150-01-413-6897	Box of 12 Quarts (case)	10W30	$11.52
9150-01-413-6892	5 Gallon Container	10W30	$18.25
9150-01-413-6990	55 Gallon Drum	10W30	$158.50
9150-01-421-1427	One Quart Bottle*	15W40	$1.16
9150-01-421-1424	5 Gallon Can	15W40	$18.80
9150-01-421-1432	55 Gallon Drum	15W40	$174.12

**Must be ordered in multiples of 12 (case load quantities only).*

These products are on a Direct Vendor Delivery (DVD) contract, so the oil is shipped directly from the manufacturer's plant to a facility within 15 days (for 10W30) and 30 days (for 15W40). Overseas customers can expect slightly longer delivery times. And, for your convenience, there is no minimum order quantity for these DVD deliveries.

Buying re-refined oil supports recycling, reduces disposal, protects the environment, conserves our nation's resources, and supports legislation signed by the President. Contact Ms. Robin Champ at 1-800-345-6333, (804) 279-4908, DSN 695-4908, or e-mail at rchamp@dscr.dla.mil for more information on these products and a copy of the new 1997 DSCR Motor Oil Brochure. You may visit the DSCR Internet Home Page at <http://www.dscr.dla.mil>. ■

Status of the JG-APP Initiative

Contractor	Potential Programs/Owners	Material(s) Identified	Summary	POC
Boeing Defense & Space Group (BD&SG) Seattle, WA	A-6, ACM, AGM-131A, AGM-86, ASW, Avenger, B-1B, B-2, B-52H, CH-46, CH-47, Comanche, E-3A, E-4B, E-6, E-767, E-8A, EELV, F-22, FO-E-3A, IUS, KC-135, Minuteman, Peacekeeper, Shuttle Upper Stage	Cadmium, Chromium, and Nickel	Three candidate chemical elimination/reduction projects involving cadmium, chromium, and nickel have been identified at this site. Replacement technologies being considered are tin-zinc for cadmium plating, High Velocity Oxygen Fuel (HVOF) for chromium plating, and iron strike in place of nickel plating. Information is being gathered to produce the PAR.	Boeing: Art Whitson (206) 544-1772 DCM; Laurence W. Hopper (206) 773-2938 JPPAB: David Asiello (703) 602-5334 Luis Garcia-Baco (703) 617-2818 Ken Siler (703) 767-3412
Joint Group on Acquisition Pollution Prevention (JG-APP)/Propulsion Environmental Working Group (PEWG) (Allied Signal Engines, Allison Engine Company, General Electric Aircraft Engines, United Technologies Corporation-Pratt & Whitney, Williams International	F100, F101, F103, F107, F108, F110, F112, F117, F118, F119, J52, T56, T64, T406, T700, TF30, TF33, TF39 engines	Lead as found in dry film lubricants (DFLs)	The targeted HazMat is lead, as used in dry film lubricants. A propulsion industry consortium, working within the Propulsion Environmental Working Group (PEWG), is being formed to identify engineering requirements for alternatives that can meet the needs of multiple companies.	Allied Signal: Jim Laird (602) 231-1613 Allison Engine Co.: Subhash Naik (317) 230-5760 GEAE: Steve Tefft (513) 243-9152 UTC-P&W: Samir Patel (561) 796-2536 Williams Int'l.: Bill Schimmel (810) 960-2463 PEWG: Major Blane Wampler (937) 255-2596, ext. 3261 JPPAB: Luis Garcia-Baco (703) 617-2818
Hughes Missile Systems Company (HMSC), Tucson, AZ	ACM, AMRAAM, Phalanx, RAM, Standard Missile, Stinger, Tomahawk, TOW	Chrome/All Except Phalanx and Tomahawk	The JTP for the reduction/ elimination of chromium chemical conversion coatings was submitted to the weapon systems program managers for approval. Hughes' preliminary test results, ESOH study results, and other data for each identified alternative were added to the PAR.	HMSC: George Reed (520) 794-1826 DCMC: John Stallings (520) 794-4674 JPPAB: Luis Garcia-Baco (703) 617-2818
Lockheed Martin Electronics & Missiles and Information Systems Companies (LM), Orlando, FL	AEGIS, AGTS, ALS, AN/AAS-18, AV-8B COFT SAUDI/KUWT), CASS Lot4, CASS Lot5+, CECOM, COFT, Comanche, Patriot, CVI, DDG, ET, F-14 IRST, F-22 MLD, F/A-18, HAGS, Hellfire II, IVACC, Javelin, LANTIRN, LAV LLLTV, Longbow FCR, Longbow Missile, Predator, PT2000, RPCP, TADS/PNVS, TDT, UEC, WCMD	Toluene, methyl ethyl ketone (MEK), xylenes, methyl isobutyl ketone (MIBK), benzene	Work continues on the JTP to establish the engineering requirements and test methods to qualify alternatives for identification marking. At least two additional JTPs (those already being finalized at other locations) will be leveraged into this site: alternatives for high-VOC primers and topcoats, and alternatives to chromated primers.	LM: Linda Dolan (407) 356-2520 DCMC: Robert Watson (407) 356-9481 JPPAB: David Asiello (703) 602-5334

Status of the JG-APP Initiative (continued)

Contractor	Potential Programs/Owners	Material(s) Identified	Summary	POC
McDonnell Douglas Aerospace-East (MDA), St. Louis, MO	AV-8B, C-17, F-15, F/A-18, Harpoon/SLAM, T-45 TS	Chromium (chromated primers)	On 8 Jan 97, business and technical representatives from F-15, F/A-18, T-45 TS, NAVAIR, Armstrong Labs, and ASC/EME participated in a teleconference with representatives from MDA and the Joint Pollution Prevention Advisory Board (JPPAB). The purpose of the teleconference was to review action items from previous meetings, review the cost adjudication, and disseminate information among participants. All open action items were established. The status of the schedule for painting F/A-18 aircraft was discussed along with MDA flight test proposal status.	Richard Pinckert (314) 234-0623 Larry Triplett (314) 232-2882 DCMC: Ray Massey (314) 233-9199 JPPAB: Ken Siler (703) 767-3412 David Asiello (703) 602-5334
Texas Instruments Defense Systems and Electronics (TI-DS&E), Dallas, TX	P3, JSOW, HARM, F/A-18, PVWY III, F3 Production, F-16, LANTIRN, M1A2-CITV, AVENGER, Javelin	High Volatile Organic primers and topcoats containing MEK, Toluene, and Xylene (MIL-P-23377, MIL-C-22750, MIL-C-46168, MIL-C-83286)	This site completed the first Single Process Initiative block change on high VOC paints and primers. In addition to the materials and processes identified in the block change, other alternatives are being considered. Texas Instruments is also participating in the identification marking project at Lockheed Martin	TI-DS&E: Mike Leake (214) 995-8883 DPRO: Ed Charles (214) 952-2274 JPPAB: Luis Garcia-Baco (703) 617-2818
United Technologies Corporation-Pratt & Whitney (UTC-P&W), West Palm Beach, FL	Engines - F119 & 100, TF-30, TF-33 (AF); J-52 & TF-30 (N), and SSME (NASA)	Chromium - Zinc chromate primer	The JTP has been finalized and development of the PAR continues. Technical stakeholders are working with vendors to develop the final list of alternatives.	UTC-P&W: Mike Gehron (561) 796-6435 DPRO: Janice Wilson (561) 796-2169 JPPAB: Luis Garcia-Baco (703) 617-2818 Ken Siler (703) 767-3412

SBIR DEVELOPED HAZARDOUS WASTE "MAGIC PROBE" SYSTEM

A small business innovative research (SBIR) project, managed by a program 8 AL/OE Program Manager at Armstrong Laboratory (AL), resulted in the development of a prototype system called a "Fiber Optic FTIR Hazardous Waste Identification Sensor System." The prototype system was developed under contract by Foster-Miller Corp., a small business located in Waltham, MA. The probe, designed for use in liquid wastes and programmed to identify typical Air Force hazards materials occurring in liquid wastes, will print out percentages of actual components of the liquid hazardous waste in a container when dipped into the hazardous waste. A typical print out for paint solvent wastes is as follows: methyl ethyl ketone - 20%; toluene - 51%; acetone - 3%; petroleum hydrocarbons (similar to hexane) - 6%; and ethyl acetate - 20%. Comparison of results to the normal type of laboratory analysis was very favorable.

This project involved a two-phase approach. Phase 2 efforts to fine-tune the analysis have been completed. Foster-Miller Corp. will debut the system at the Pittsburgh Conference Exhibition, March 17-21, held this year in Atlanta, GA. This environmental conference, which typically attracts more than 30,000 scientists and features scientific presentations and many exhibitors, allows scientific companies to showcase new/updated technologies and equipment.

Air Force teams field tested the probe system at Andrews AFB, MD, and Osan AB, Korea. They dubbed the new probe system, the "Magic Probe," because of their ability to obtain a printed analysis within a few minutes.

The new probe system is expected to be cost effective as a typical laboratory assay of a single sample of liquid hazardous waste can cost up to $2,000 each. The greatest asset of the new probe system will be the ability to obtain on-site analyses and avoid long turnaround times in obtaining laboratory results. For additional "Magic Probe" details, please contact Mr. T. C. Thomas, AL/OE, DSN 240-2002/Comm 210-536-2002. ■

UPCOMING EVENTS

Date	Meeting	Location	POC	Phone/Fax
24-28 Mar	1997 Air Force Corrosion Program Management Conference	Crown Plaza, Macon, GA	CMSgts Jett/McKenna	DSN 468-3284
02 Apr	Weapon System P2 Center Working Group VTC	1100-1200 Eastern Time	Mr. Peter Logan	DSN 478-8338
07-10 Apr	23rd Environmental Symposium and Exhibition	Ernest N. Morial Convention Center, New Orleans, LA	Ms. Carey M. Jagels ADPA	(703) 247-2578 FAX (703) 522-1885
09-10 Apr	Weapon System P2 Applications Course	OC-ALC, Tinker AFB, OK	Mr. Fred Hall	DSN 844-7071
14-15 Apr	ESOH TPIPT Meeting	Omni Hotel, San Antonio, TX	Ms. Aida Starcher	DSN 240-2129 FAX DSN 240-2069
14-17 Apr	1997 Ultrahigh-Pressure Waterjet Users Conference	Grosvenor Resort, Walt Disney World Village, Lake Buena Vista, FL	Ms. Kathy Noll	(814) 269-6859 FAX (814) 269-2798
05-06 May	Weapon System P2 Applications Course	SA-ALC, Kelly AFB, TX	Ms. Jeanette McHaffey	DSN 945-7391
05-08 May	Global Demilitarization Conference	Reno, Nevada	ADPA	(703) 522-1820
06-08 May	1997 Halon Options Technical Working Conference	Sheraton Old Town, Albuquerque, NM	Ms. Donna Chavez	(505) 272-7260 FAX (505) 272-7203
07 May	Weapon System P2 Center Working Group VTC	1100-1200 Eastern Time	Mr. Peter Logan	DSN 478-8338
08-09 May	Weapon System P2 Applications Course	HSC, Brooks AFB, TX	Mr. Earl O'Carroll	DSN 240-2190
19-22 May	6th Biennial Joint Depot Environmental Panel Workshop, Conference and Exhibition	Town and Country Hotel, San Diego, CA	Mr. Gary Smith	(513) 656-2772 (DSN 986) e-mail: smith@jdmag.wpafb.af.mil
21-22 May	Weapon System P2 Applications Course	SM-ALC, McClellan AFB, CA	Capt Allen Naugle	DSN 633-3672, ext. 316
29-30 May	Weapon System P2 Applications Course	WR-ALC, Robins AFB, GA	Capt John Lindell	DSN 468-1124
04 Jun	Weapon System P2 Center Working Group VTC	1100-1200 Eastern Time	Mr. Peter Logan	DSN 478-8338
04 Jun	Center Environmental Protection Committee Meeting	WPAFB, OH, Area B, Bldg. 10	Capt Craig Smyser	DSN 785-3054, ext. 345
04-05 Jun	Weapon System P2 Applications Course	OO-ALC, Hill AFB, UT	Maj Norm LeClair	DSN 777-6655
17-18 Jun	Process Solutions Recovery & Recycle Information Exchange	Key Bridge Marriott Hotel, Arlington, VA	Ms. Kathy Noll	(814) 269-6859 FAX (814) 269-2798
Week of 23-27 Jun	Weapon System P2 Applications Course	ASC, Eglin AFB, FL	Dr. Odin Toness	DSN 872-3310, ext. 2161
25-26 Jun Tentative	Air Force Coating Technology Screening Committee Meeting	WPAFB, OH Area B	Mr. Jim Kampe	DSN 785-3370 FAX DSN 986-2284
15-17 Jul	Weapon System P2 Center Group Conf. - 7th Joint Solutions to Common Problems	NDCEE, Johnstown, PA	Ms. Kathy Noll	(814) 269-6859 FAX (814) 269-2798

ARMSTRONG LABORATORY SERVICES AVAILABLE

Armstrong Laboratory (AL) located at Brooks AFB, TX offers cost effective environmental compliance – sampling, analysis, and monitoring (EC-SAM) services to Air Force and DoD customers. Significant savings in cost can be realized by utilizing AL versus contracting out laboratory services as indicated by the following:

- Lab analyses are significantly cheaper
- No extra charge for emergency analyses (if performed in-house)
- Fee for service not based on profit making
- Highly automated lab equipment at no extra expense
- Air Force interests at heart, no gouging on costs, no performing un-needed analyses, coordination with customers, etc.
- Charges are the same whether performed in-house or out-sourced to a commercial source (except for priority analyses)
- Understands Air Force problems and employs cost effective field teams
- Services include help in developing installation sampling plans to eliminate un-needed work

Most commands have an account established at AL to handle EC-SAM costs. This account can be used or a base can provide funding directly. The Program Managers of these accounts and the command they monitor are identified as follows:

- ACC, USAFE, Brooks AFB customers contact Ms. Denene Turner at DSN 240-6177
- PACAF, AFSPC, Fort Sam Houston, AFMC, Det 3 customers contact SSgt(sel) Yvette Pitula at DSN 240-6176
- ANG, AMC, AFRES, AETC, USAFA, DoD customers contact 2Lt Kasandra Carlson at DSN 240-6175

Special services are also available to enhance your utilization of AL's services. Take advantage of AL's convenient sample container and mailing services. Consider AL's pre-paid express service to get proper sample containers mailed to you. Field teams are available to be deployed to help solve environmental problems at your installation. (T. C. Thomas, AL/OE, DSN 240-2002/Comm 210-536-2002). ■

DoD SHELF-LIFE ITEM MANAGEMENT

Incurring high disposal costs from your hazardous shelf-life materiel? Shelf-life materiel going to waste in storage? There is a new DoD resource that will help you to manage shelf-life materiel. The Defense Logistics Agency (DLA) Operations Support Office (DOSO) will show you how to properly manage these items and train your personnel to reduce disposal costs by using the M-204 Program. Have you heard of the M-204 Program? If not, you are not in step with the rest of DoD. DOSO is providing a two-day course in DoD Shelf-Life Management to include hands-on computer instruction via on-line access to the DoD M-204 Program. The training also provides DoD policy information on how to properly manage your shelf-life materiel at the ICP/SOS and distribution levels.

Call DOSO now to request training for your activity or to sign up for one of the classes being taught at the Defense Supply Center Richmond, VA on 25-26 Mar 97; 3-4 Jun 97; and 9-10 Sep 97. DOSO points of contact are Mr. Gilbert Ruffin, DSN 695-5224/(804) 279-5224, Ms. Karen Wolfe, DSN 695-5212/(804) 279-5212, or Ms. Pam Hagan, DSN 695-3880/(804) 279-3880. This training is guaranteed to provide your site with the most current DoD policy information and the latest technology resources used to manage shelf-life materiel. ■